

a one-proton signal at  $\tau$  1.60 which is typical for H-5 (quadruplet  $J_{\text{ortho}} = 9$  Hz;  $J_{\text{meta}} = 2$  Hz) and a multiplet due to eight aromatic protons at  $\tau$  2.55. The large difference between the chemical shifts of the H-5 proton and the other aromatic protons ( $\Delta\tau$  95 Hz) shows that this compound is a derivative of 4-quinolone [3]. The presence in the spectrum of a one-proton singlet at  $\tau$  3.81 corresponding to the H-3 proton of the 4-quinolone nucleus [4] and of a three-proton singlet at  $\tau$  6.94 (N-CH<sub>3</sub> group) and also the absence of other signals from the spectrum, shows that the alkaloid has the structure of 1-methyl-2-phenyl-4-quinolone, which has been isolated from the plant Balfourodendron riedelianum [5] and obtained from 4-methoxy-2-phenylquinoline by an isomerization reaction [6].

The UV spectrum of the base that we isolated and its melting point correspond to those published for 1-methyl-2-phenyl-4-quinolone [6].

From the phenolic fraction of the total bases we isolated haplofoline and haplopine, which are present in the epigeal part of H. foliosum.

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#### THE ALKALOIDS OF THALICTRUM

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We have studied the fraction of quaternary bases obtained from the roots of four species of *Thalictrum*. The raw material was moistened with 10% ammonia and extracted with chloroform and then repeatedly with methanol. The methanolic extract was dried in vacuum and a solution of potassium iodide was added to the residue. The berberine iodide that deposited was separated off, and magnoflorine iodide was isolated from the mother liquor (table).

Plant	Site and date of collection	Vegetation period	Content of alkaloid, %		
			sum of the tertiary bases	berberine iodide	magnoflorine iodide
<i>Th. foetidum</i> L.	Susamy, 9 August 1965	Fruit-bearing	0.20	+	0.10
<i>Th. isopyroides</i> C. A. M.	Kyzylkumy, Kokchatau, 22 May 1964	Necrosis	1.2	—	0.5
<i>Th. longipedunculatum</i> E. Nik.	Karkara, KirgSSR, 18 June 1967	Flowering	0.5	0.04	1.8
	Nuratatau, 19 May 1967	Budding	1.1	0.26	+
<i>Th. minus</i> L.	Lyashkarak Tashkent oblast, 10 September 1964	Necrosis	0.8	—	1.07
	Darbaz range, Pamirs, 18 June 1966	Flowering	0.8	0.1	1.4

\*detected chromatographically

On the basis of our results and those given in the literature, we came to the conclusion that berberine and magnoflorine are characteristic for plants of the genus *Thalictrum*.

From the epigeal part of *Th. longipedunculatum* we isolated a small amount of thalictitrine [1, 2]. Recently, Bulgarian workers [3] have reported the isolation and the establishment of the structure of the new alkaloid thalfoetidine

from Th. foetidum. The properties of thalfoetidine are very close to those of thalictirine. A comparison of the IR spectra (in chloroform) of the two substances has shown their identity. We are obliged to Dr. N. M. Mollov for the IR spectrum of thalfoetidine.

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#### THE STRUCTURE OF SEWKORINE

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From the epigeal part and bulbs of Korolkowia sewerzowii Rgl., collected in the flowering stage in the Fergana oblast, chloroform extraction has yielded the new alkaloid sewkorine with mp 237-238° C (from methanol),  $[\alpha]_D^{25} -40.2^\circ$  (c 1.316; CH<sub>3</sub>OH), composition C<sub>34</sub>H<sub>55</sub>O<sub>6</sub>N·1.5 H<sub>2</sub>O. The base forms a hydrobromide with mp 221-223° C and a hydrochloride with mp 214-216° C. IR spectrum of sewkorine:  $\nu_{\max}$  1100-1030 cm<sup>-1</sup>, 3430-3350 (OH); 1450, 2860-2840 (C-CH<sub>3</sub>); 2790 cm<sup>-1</sup> (N-CH<sub>3</sub>). The hydrolysis of sewkorine yielded *D*-glucose and a mixture of amino alcohols which gave two spots on a thin layer of alumina with R<sub>f</sub> 0.9 and 0.5 (toluene-petroleum ether-methanol (5:5:0.5) system). The aglycones in benzene were passed through alumina. The first fraction gave a base with R<sub>f</sub> 0.9 and the second fraction substances with R<sub>f</sub> 0.9 and 0.5. The third and fourth fractions yielded the new base sewkoridine with mp 179-180° C (from acetone) and R<sub>f</sub> 0.5,  $[\alpha]_D^{25} -78^\circ$  (c 0.846; CH<sub>3</sub>OH), composition C<sub>28</sub>H<sub>45</sub>ON, which forms a digitonide, a hydrochloride with mp 282-283° C, a hydrobromide with mp 273-275° C, a hydrogen sulfate with mp 291-292° C, and an acetyl derivative with mp 151-153° C (C<sub>30</sub>H<sub>47</sub>O<sub>2</sub>N). Sewkoridine has a secondary hydroxyl and a N-methyl group. IR spectrum:  $\nu_{\max}$  3415, 1070 cm<sup>-1</sup> (OH), 2940-2830, 1460-1440 (C-CH<sub>3</sub>) and 2790 cm<sup>-1</sup> (N-CH<sub>3</sub>).

Sub- stance	Resonance signals, $\tau$						
	(S), 3H, C-19CH <sub>3</sub>	(S), 3H, C-18CH <sub>3</sub>	(D), 3H, C-21CH <sub>3</sub>	(S), 3H, N-CH <sub>3</sub>	(M), 3H, (olefin)	(M), H, HCOCOCH <sub>3</sub>	(S), 3H, COCOCH <sub>3</sub>
(I)	9.06	9.50	9.21	7.99	4.63	—	—
(II)	9.05	9.49	9.21	7.88	4.67	5.40	8.04

Note. S—singlet; D—doublet; M—multiplet.

When sewkoridine was heated with 10% sulfuric acid, an anhydrobase with mp 134-136° C, R<sub>f</sub> 0.9, was obtained. The IR spectrum of the anhydrobase lacked the absorption band of the hydroxy group. The IR spectra of sewkoridine and solasodine are very similar, differing only in the absence of a few absorption bands and the presence of a few others. On the basis of these results, sewkoridine can be classified as a steroid alkaloid, which is confirmed by its NMR and mass spectra. The features of the NMR spectra of sewkoridine (I) and O-acetylsewakoridine (II), taken in CDCl<sub>3</sub>, are given in the table.

The signals at 9.06, 9.05, 5.4, 4.63, and 4.67  $\tau$  show that sewkoridine has a 3 $\beta$ -OH group and a  $\Delta^5$  double bond [1]. The splitting off of the hydroxy group from C-3 and hydrogen from C-4 in the form of water from sewkoridine lead to the formation of the anhydrobase. The mass spectrum of sewkoridine shows the peaks of ions with m/e 112 (100%); 125 (52%); 138 (49%); M-57 (5%); M-18 (44%); M-15 (17%); 411 (M<sup>+</sup>) (72%) (2). The absence of a resonance signal from the C-27 CH<sub>3</sub> and the presence of the peak of an ion with m/e 112 in the spectra of this substance shows that its molecule contains a monosubstituted hexamethylenemethylamine. The formation of fragments with m/e 125 and 138 shows that the second double bond in sewkoridine is present between C-15 and C-16.